

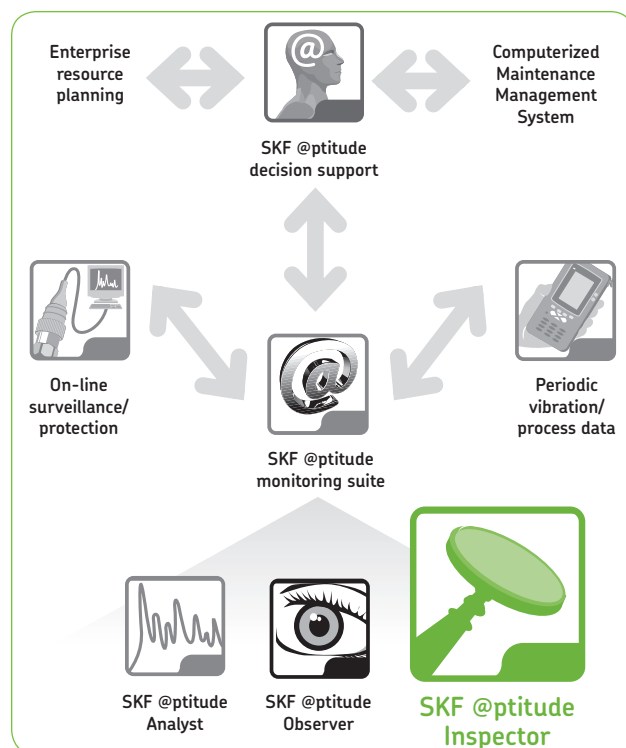


SKF @ptitude Inspector

Process inspection and analysis software for use with the SKF MARLIN data manager

SKF @ptitude Inspector is a key module in a family of reliability software applications that work together as SKF @ptitude Monitoring Suite.

SKF @ptitude Inspector software, combined with the SKF MARLIN family of data managers, provides a comprehensive solution for Operator Driven Reliability (ODR). With @ptitude Inspector, SKF harnesses the power of today's leading software technologies to bring you in-depth analysis and the ability to communicate machine condition between operations, maintenance, engineering and plant management.



Software tailored to the needs of the MARLIN user

SKF @ptitude Inspector incorporates a simple user interface to speed up system implementation.

- Easily create and modify databases in a hierarchical form, define data collection points and types, create routes then download to the MARLIN data manager.
- Compliance reporting and scheduling allows a range of collection schedules that vary from day, week, month, day of year, and multiple or repeat collections per time period. Reports identify missed or overdue collection points or data collection that is out of compliance parameters.
- A variety of user specified views includes multi-pane plots, window sizes and positions, a customizable tool bar and more to enable optimum user productivity and efficiency.
- Standardized notes can be used to document observed machinery and process conditions then combined with machine data and images to create a variety of reports.

Operator Driven Reliability

ODR, the framework for organizing the activities of operators is key to an organizations reliability program. Being in close proximity to the machines – 24 hours a day, 7 days a week, operators are often the first to notice even the smallest changes in machine condition.

@ptitude Inspector and the MARLIN system enables operations personnel to make their rounds, collecting machine condition, inspection and process data easily and efficiently in the palm-sized unit. Data is trended and when certain conditions are met, the MARLIN system alerts the operator, then provides instructions for immediate corrective action.



The screenshot displays the @ptitude Inspector software interface. The main window, titled "ROUTE - Pump Inspections", shows a tree view of inspection points under "PUMPS". The selected point is "P-105", which is expanded to show various inspection items: "#2 MOTOR INBOARD", "CAPS AND GUARDS", "DISCHARGE PRESSURE", "NOISE/VIBRATION", "OIL MIST/CUPS/LUBERS", "SEAL INTEGRITY", "PUMP IB MCD (STUD)", and "CAPS AND GUARDS". The right pane shows a table of these items with their descriptions and alarm status.

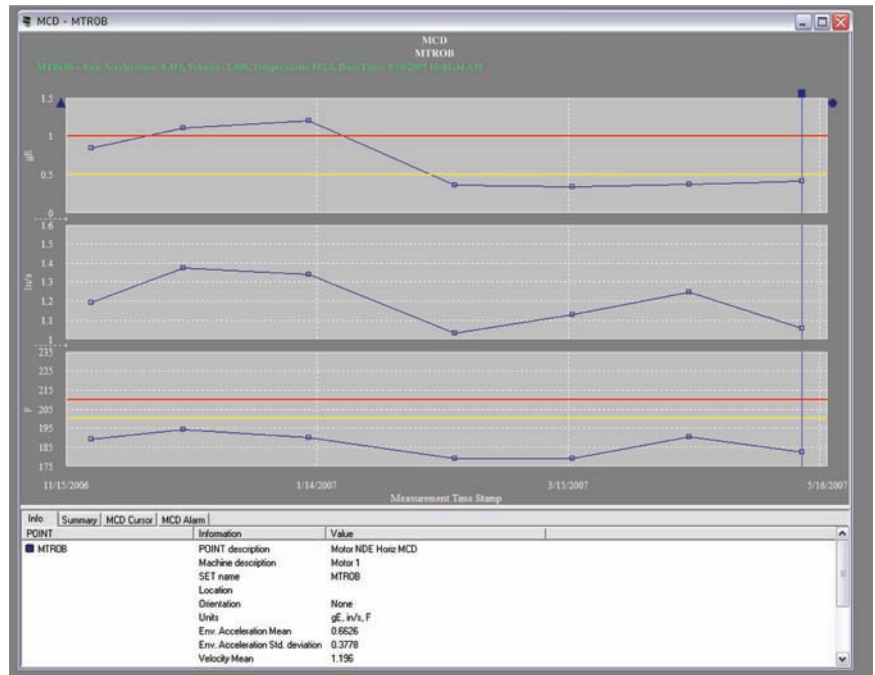
Name	Description	Alarms
#2 MOTOR INBOARD	P-105 #2 MOTOR INBOARD	No data available
CAPS AND GUARDS	P-105 CAPS AND GUARDS	Alert
DISCHARGE PRESSURE	P-105 DISCHARGE PRESSURE	Danger
NOISE/VIBRATION	P-105 NOISE/VIBRATION	Alert
OIL MIST/CUPS/LUBERS	P-105 OIL MIST/CUPS/LUBERS	Good
PUMP IB MCD (STUD)	P-105 PUMP INBOARD BRG (S...	Good
SEAL INTEGRITY	P-105 SEAL INTEGRITY	Alert

Below the main window, there is a "NONROUTE" window showing a "Hierarchy" of inspection points. The hierarchy includes: "Pump 13 General Cond", "Pump 13 Oil Cond.", "Pump", "Discharge Pressure", "Oil Clarity", "Suction Pressure", "Temp", "PUMP1INTEMP", "MTR11BMCD", and "MTR10BMCD". At the bottom of this window are "Collect" and "Review" buttons.

Operator routes are easily created in @ptitude Inspector and downloaded to the MARLIN system.

Expert analysis and efficient decision support

SKF @ptitude Inspector fully supports the Machine Condition Detector (MCD) POINT type of the MARLIN (velocity, acceleration enveloping, temperature). All types of process data types are supported including: pressure, flow, RPM, temperature and AC or DC current. Instantly access points in alarm or view alarm status for a specific machine. An Alarm Wizard helps calculate alarms for plant machinery, making this complex task almost effortless for the user. @ptitude Inspector interfaces with @ptitude Decision Support, which identifies the probability of specific faults within an asset or process, then prescribes the appropriate action to address the problem. This systematic approach to decision-making enables consistency among employees throughout your local or global organization.



Report - Collection Status

Collection Status Report

5/10/2007 11:55:36 AM

Weekly Collection

Collection Status

Activity date	Machine name	POINT name	Collection status
5/10/2007 8:00:00 AM	N. Pump	I Pressure	Collected
5/10/2007 8:00:00 AM	N. Pump	D Pressure	Collected
5/10/2007 8:00:00 AM	N. Pump	Oil Clarity	Collected
5/10/2007 8:00:00 AM	N. Pump	Oil Debris	Not collected
5/10/2007 8:00:00 AM	N. Pump	Inspection	Not collected
5/10/2007 8:00:00 AM	N. Pump	#1 Bearing	Collected
5/10/2007 8:00:00 AM	N. Pump	#2 Bearing	Collected
5/10/2007 8:00:00 AM	N. Pump	#3 Bearing	Uncollectible
5/10/2007 8:00:00 AM	N. Pump	#4 Bearing	Uncollectible
5/3/2007 8:00:00 AM	N. Pump	I Pressure	Collected
5/3/2007 8:00:00 AM	N. Pump	D Pressure	Collected
5/3/2007 8:00:00 AM	N. Pump	Oil Clarity	Collected
5/3/2007 8:00:00 AM	N. Pump	Oil Debris	Collected
5/3/2007 8:00:00 AM	N. Pump	Inspection	Collected
5/3/2007 8:00:00 AM	N. Pump	#1 Bearing	Missed
5/3/2007 8:00:00 AM	N. Pump	#2 Bearing	Missed
5/3/2007 8:00:00 AM	N. Pump	#3 Bearing	Missed
5/3/2007 8:00:00 AM	N. Pump	#4 Bearing	Missed

Information when you need it

Sharing your data with other groups within your organization is vital in today's business world. @ptitude Inspector facilitates this data exchange by providing full data import/export capability.

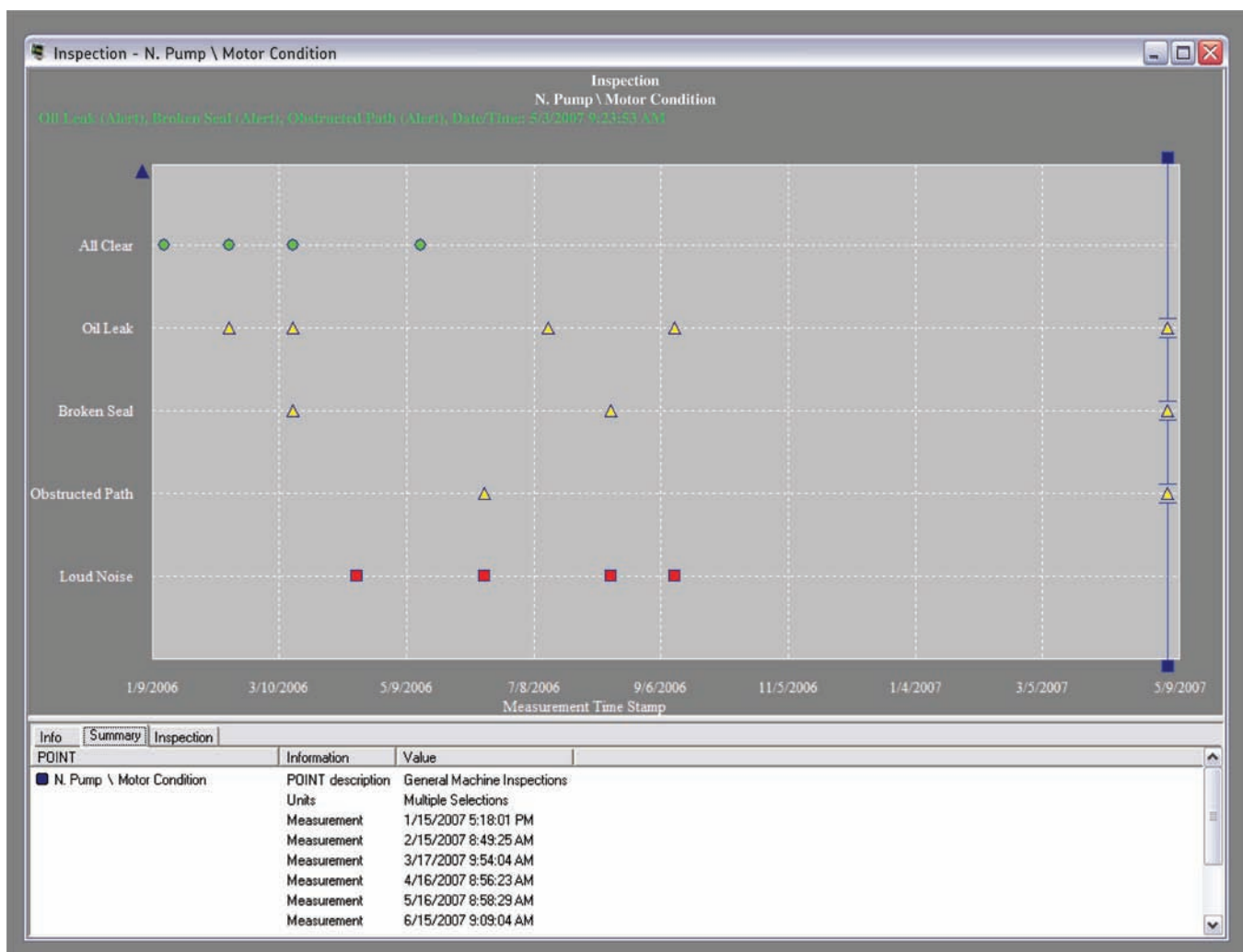
Collected data and observations are used to form a wide range of standard or customized management reports. Data plots, machine notes and images can be included with the report, so that a complete machinery and process documentation package can be generated and e-mailed, posted to your company intranet, or imported to a document.

When used with SKF @ptitude Work Notification, work orders that may have previously been ignored are easily generated by machine operators as soon as they discover and identify potential problem conditions.

Leading edge technology and open architecture

@ptitude Inspector incorporates the latest software development technologies. It is a 32-bit Windows® 2000, and XP Professional application which utilizes COM™ design and supports an Oracle® database and Microsoft SQL Server™. Using the Windows Explorer layout makes it easy

to view, sort and re-arrange data measurements with the press of a button. Cut and paste, drag and drop and right mouse click functionalities enhance your productivity and greatly simplify operation. With all of its features, @ptitude Inspector is still easy to install, upgrade and maintain.



It is all at your fingertips

With its ease of implementation and user friendly interface, @ptitude Inspector software facilitates the success of your Operator Driven Reliability program. Operators can easily customize their route points to enable quick and accurate collection of machine data and process observations. Machine status and alarms can be analyzed and corrective actions recommended with @ptitude Decision Support.

From management to your entire organization, reports keep you informed of plant changes that could affect your production. To hear more about what @ptitude Inspector software, combined with the SKF MARLIN family of data managers, has to offer your organization contact your SKF representative today.

ROUTE Properties

General | Schedule | Notes | Work Type

☒ Enable schedule

Schedule type:

☐ Interval-based ☒ Calendar-based

Collection time:

Start date: 1/ 8/2007

Start time: 8:00:00 AM

End time: 4:00:00 PM

Collection schedule:

☐ Hourly ☒ Day 5 of every 1 month(s)

☐ Daily ☐ The 1st Monday of every 1 month(s)

☐ Weekly ☒ Monthly ☐ Yearly

Flexible compliance reporting and scheduling ensures consistent data collection.

Report - Last Measurement

Last Measurement Report
Source: Weekly Collection
5/10/2007 12:12:27 PM

Machine name	POINT name	Date/Time	Last value	Previous value	Units	% change	Alarm status
MTROB	MTROB I Pressure (CH 1)	5/10/2007 9:23:18 AM	82.143	75.719	PSI	8.48	---
MTROB	MTROB D Pressure (CH 1)	5/10/2007 9:23:25 AM	165.422	146.257	PSI	13.1	Overall - Danger
MTROB	MTROB Oil Clarity (CH 1)	5/10/2007 9:23:32 AM	---	---	Single Selection	---	---
MTROB	MTROB Oil Debris (CH 1)	5/3/2007 9:23:39 AM	---	---	Single Selection	---	---
MTROB	MTROB Inspection (CH 1)	5/3/2007 9:23:53 AM	---	---	Multiple Selections	---	Inspection - Alert
MTROB	MTROB #1 Bearing (ENV)	5/10/2007 10:01:34 AM	0.415	0.376	gE	10.4	---
---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---
---	MTRIB #1 Bearing (VEL)	---	1.056	1.248	in/s	-15.4	---
---	MTRIB #1 Bearing (TMP)	---	182.560	190.540	F	-4.19	---
MTROB	MTRIB #2 Bearing (ENV)	5/10/2007 9:53:20 AM	0.752	0.532	gE	41.4	---
---	---	---	---	---	---	---	MCD (VEL) - Danger
---	---	---	---	---	---	---	MCD (TMP) - Alert
---	MTRIB #2 Bearing (VEL)	---	2.520	2.067	in/s	21.9	---
---	MTRIB #2 Bearing (TMP)	---	170.560	176.000	F	-3.09	---

SKF @ptitude Inspector features and capabilities

ALARMS

- Alarm view
 - Quickly find and identify all points in alarm within the hierarchy, group, route, workspace, or machine
- Alarm details
 - Provides a summary of type of alarm and status
- View alarm status indicators directly at the hierarchy
- User defined alarm database
 - Public alarms that can be shared with other users
 - Private alarms that can only be used by specific users
 - Unlimited number of alarms available
- Four overall alarm levels per measurement point
 - Danger high, alert high, alert low, danger low
 - Out of window, in window, level alarms supported
- Alarm types
 - Overall alarm
 - Inspection
 - MCD

COMMUNICATION

- Microsoft ActiveSync® (USB)
- Automatic report generation based on a specified time, data upload via scheduler wizard
- Download by Hierarchy, Route, or Workspace
- Optional CMMS interface for Work Notification
- OPC client interface available

DATA DISPLAY

- Overall trend displays (single, overlay)
- Inspection
- MCD

DATABASE

- Built on Oracle® database management system
- ODBC, SQL, and TCP/IP protocol compliant database opens the database content
- Microsoft SQL Server 2005 compatible
- Fully networkable in a Local Area Network (LAN), Wide Area Network (WAN), and Thin-client (Terminal) environments
- Unlimited number of:
 - hierarchies
 - collection points
 - measurements
- Database supports
 - XML data importing and exporting
 - Binary importing and exporting
- Point configuration management to quickly and easily make system-wide changes

GENERAL

- User preferences allow customized look and feel
 - System, measurement communication, colors, plot settings
- Context sensitive help
- Complete user manual on installation CD-ROM (Adobe® Acrobat® PDF format)
- Limited warranty
- Basic Product Support Plan
- On-site product installation and training services available

MEASUREMENTS

- Derived Point – *utilizes a user definable mathematical formula to calculate a derived value from data collected for multiple points. The result of this calculation is used for automatically inserting a value into the identified derived point. This enables easier and more efficient calculation of process related performance measurements.*
- Conditional points
- English or metric units
- Volts (AC or DC)
- Temperature (°C and °F)
- Pressure (PSI)
- Flow (GPM, LPM)
- Bars
- Items
- Operating hours
- Speed
- Units per minute
- Inspection points (user definable)
 - Single
 - Multiple (up to five)
- MCD
 - Enveloped acceleration
 - Velocity
 - Temperature

REPORTS

- Preserved reports – *enables you to maintain a history of reports.*
- Shared reports – *allows you to share and preconfigure reports for selected users.*
- Send reports to screen, HTML file, printer
- HTML file can be posted to internet, intranet, e-mailed
- HTML files can be opened and modified further using Microsoft® Office products, i.e. Word®, Excel®, PowerPoint®
- Customizable report content
- Data plots, supplemental information, and digital images can be included in reports
- Report types
 - Last measurement
 - Exception
 - Overdue/non-compliant

- Pending overdue/non-compliant
- Collection status
- Route history
- Route statistics
- Set statistics
- Upload statistics
- History
- Inspection
- Work notification
- Blank (user defined)
- Compliance
- Report templates allow quick and easy report configuration for use and reuse

SECURITY

- Fully configurable user rights that allow you to read, view and have full access
- Unlimited access levels
- Allows assignment of access rights to user groups
- Hierarchy access – *an enhanced security feature that authorizes viewing and manipulation of hierarchies.*

TECHNOLOGY

- 32-bit Windows software
 - True multi-processing operating environment allowing simultaneous background and foreground processing
 - Complete right click functionality (Drop down menus)
 - Drag and drop
 - Cut/Copy/Paste
- Microsoft Windows 2000/XP Professional operating system
- Oracle database management system
- Microsoft SQL Server 2005 compatible
- Program architecture based on Microsoft Component Object Model (COM) “plug-in” technology
 - Seamless integration of new functionality
 - Complete integration of third party applications
- Windows Explorer layout
 - Shortcut buttons
 - Multi-pane views
 - Tool bars and menu bars (customizable)

TEMPLATES AND WIZARDS

- Overall statistical alarm wizards uses historical data to help refine overall alarms
- Hierarchy template wizard allows for rapid hierarchy creation and machine templates for reuse
- Report template allows for the custom configuration of reports and report templates for reuse
- Scheduler wizard helps configure and preset recurring activities such as report generation, data archival and task reminders

Hardware requirements

STAND ALONE CONFIGURATION • Running SKF @ptitude Inspector • Running Oracle® or Microsoft SQL database management system • Storing data		
	Minimum Requirements	Recommended Requirements
Operating system	Windows 2000 with Service Pack 3+ OR Windows XP Professional with Service Pack 2	
Processor (* Note 1)	Pentium IV, 1.6 GHz	Pentium IV, 2.1 GHz Core 2 Duo or better
RAM	1.0 GB	2.0 GB or more
Disk space available for stand alone computer (* Note 2)	1.2 GB	1.2 GB or more
CD/DVD drive	One (1) required	One (1) required
Video display	1024 x 768	1280 x 1024 or larger
Oracle®/Microsoft SQL	Version 9i, 10g/SQL Server 2005	

Network configuration – SERVER • Running Oracle® or Microsoft SQL database management system • Storing data	Network configuration for up to 35 Clients and one database. Installations of 50 Clients or greater will require an on-site assessment by our Field Service Engineers	
	Minimum Requirements	Recommended Requirements
Operating system	Windows 2003 Server, Windows 2000 Server with Service Pack 3	
Processor (* Note 1)	Pentium IV, 2.0 GHz	Pentium IV, 3.2 GHz Core 2 Duo
RAM	2.0 GB	4.0 GB or more
Quantity of hard drives (* Note 3)	3	5
Disk space available (* Note 3)	1.2 GB	1.2 GB or more
Oracle®/Microsoft SQL	Version 9i, 10g/SQL Server 2005	

Network configuration – NETWORK CLIENT • Running SKF @ptitude Inspector • Running database client software	Network configuration for up to 35 Clients and one database. Installations of 50 Clients or greater will require an on-site assessment by our Field Service Engineers	
	Minimum Requirements	Recommended Requirements
Operating system	Windows 2000 with Service Pack 3+ OR Windows XP Professional with Service Pack 2	
Processor (* Note 1)	Pentium IV, 1.6 GHz	Pentium IV, 2.4 GHz Core 2 Duo
RAM	1.0 GB	2.0 GB or more
Disk space available for each network client (* Note 2)	200 MB	500 MB or more
CD/DVD drive	One (1) required	One (1) required
Video display	1024 x 768	1280 x 1024 or larger
Oracle®/Microsoft SQL	Version 9i, 10g/SQL Server 2005	

NOTE 1: These requirements apply to SKF @ptitude Inspector complete with database management system. Other applications running simultaneously may degrade performance.

NOTE 2: These requirements ONLY apply to SKF @ptitude Inspector complete with database management system. Additional storage disk space is required for data.

NOTE 3: The major benefits of spreading Oracle across three or more hard disks at the server is the improved speed, and improved recoverability of a previously archived database. The recommended five disk configuration provides the optimal protection for backup, recovery, indexing, and speed. Disk/file configuration should ONLY be handled by a SKF Field Service Technician certified on SKF @ptitude Inspector. If using RAID, the combination of RAID 0 and RAID 1 is recommended over RAID 5.

NOTICE: If running other versions of Oracle, Microsoft SQL Server, or other database management system are expected to run in the same PC environment, please contact your local SKF Representative to inquire about compatibility.

SKF @ptitude Inspector – Process inspection and analysis software for use with the SKF MARLIN data manager

Ordering information

- SKF @ptitude Inspector software for MARLIN [CMSW 7200]

The SKF @ptitude Inspector is available in Single and Multi Client configurations. Please contact your local SKF Reliability Systems representative for Multi Client model information.

Product Support Plans (PSP)

A range of Product Support Plans are available to protect your investment. Contact your local SKF Reliability Systems Sales Representative for additional information.

Installation and training

Installation and training available through your local SKF Supplier or Representative.

SKF Reliability Systems

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